

SUPPLEMENTAL PRELIMINARY AMENDMENT

Serial Number: 09/884,862

Filing Date: June 19, 2001

Title: IMPLANTABLE INTRAVENOUS CARDIAC STIMULATION SYSTEM WITH PULSE GENERATOR HOUSING SERVING AS
OPTIONAL ADDITIONAL ELECTRODE

Page 2

Dkt: 279.024US6

34. The apparatus of claim 33 wherein the subcutaneous electrode is a conductive mesh connected to the pulse generator housing.

35. The apparatus of claim 33 wherein the subcutaneous electrode is a helical coil for encircling the pulse generator housing.

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cont 36. The apparatus of claim 33 wherein the subcutaneous electrode is a plurality of coiled segment electrodes.

37. The apparatus of claim 32 further comprising a third electrode and wherein the switch is configurable so that a shock pulse is discharged from the first electrode connected in common with the third electrode to the second electrode connected in common with the conductive housing.

38. The apparatus of claim 32 wherein the pulse generator housing includes one or more conductive regions isolated by insulating material.

39. An apparatus, comprising:
first and second electrodes for disposition near the heart;
an implantable pulse generator including pulse generator circuitry for delivering a defibrillation shock pulse to the heart;
a conductive pulse generator housing enclosing the pulse generator circuitry;
a programmable switch for connecting the first and second electrodes and the conductive housing to the pulse generator circuitry, wherein the switch is configurable so that a shock pulse is either discharged between the first electrode and the conductive housing or discharged between the second electrode and the conductive housing.

40. The apparatus of claim 39 wherein the first and second electrodes are proximal and distal electrodes incorporated into a single lead.

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Page 3

Dkt: 279.024US6

41. The apparatus of claim 39 further comprising a third electrode and wherein the switch is configurable so that a shock pulse is discharged from the first electrode connected in common with the third electrode to the second electrode connected in common with the conductive housing.

42. The apparatus of claim 39 wherein the pulse generator housing includes one or more conductive regions isolated by insulating material.

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cont 43. A method comprising:
configuring a programmable switch so that a shock pulse is delivered either between a first electrode and a conductive housing enclosing pulse generator circuitry or between a second electrode and the conductive housing;

sensing cardiac activity in order to detect an arrhythmia; and,
upon detection of an arrhythmia, discharging a defibrillation shock pulse between the conductive pulse generator housing and either the first or second electrodes according to the configuration of the programmable switch.

44. A method comprising:
sensing cardiac activity in order to detect an arrhythmia; and,
upon detection of an arrhythmia, discharging a defibrillation shock pulse between a first ventricular electrode and a second electrode disposed in the superior vena cava and connected in common with a conductive pulse generator housing.

45. The method of claim 44 further comprising configuring a programmable switch so that the defibrillation shock pulse is delivered between the first ventricular electrode and the second electrode disposed in the superior vena cava and connected in common with a conductive pulse generator housing.

46. The method of claim 44 further comprising delivering a lower energy defibrillation shock and, if the arrhythmia is not terminated, delivering a higher energy defibrillation shock.

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Page 4

Dkt: 279.024US6

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47. A method comprising:
sensing cardiac activity in order to detect an arrhythmia; and,
upon detection of an arrhythmia, discharging a defibrillation shock pulse between a first
ventricular electrode and a second electrode disposed subcutaneously and connected in common with
a conductive pulse generator housing.

48. The method of claim 47 wherein the defibrillation shock pulse is discharged between the first
ventricular electrode connected in common with a third electrode disposed in the superior vena cava
and the second electrode connected in common with the housing.

49. The method of claim 47 further comprising delivering a lower energy defibrillation shock
and, if the arrhythmia is not terminated, delivering a higher energy defibrillation shock.

50. The method of claim 47 further comprising configuring a programmable switch so that the
defibrillation shock pulse is delivered between the first ventricular electrode and the second electrode
disposed subcutaneously and connected in common with a conductive pulse generator housing.

51. The method of claim 48 further comprising configuring a programmable switch so that the
defibrillation shock pulse is delivered between the first ventricular electrode connected in common
with a third electrode disposed in the superior vena cava and the second electrode connected in
common with the housing.
